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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,636	12/17/2001	Pierre-Louis Charvet	217216US2	7560

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EXAMINER

VORTMAN, ANATOLY

ART UNIT	PAPER NUMBER
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2835

DATE MAILED: 03/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/015,636	Applicant(s) CHARVET ET AL.	
	Examiner Anatoly Vortman	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 6-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "electrical insulators" recited in claim 5, "condenser" recited in claims 11 and 12, and "insulating layer" recited in claim 12 must be shown. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 6-10 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim. See MPEP § 608.01(n). Accordingly, claims 6-10 have not been further treated on the merits.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by US/5,467,068 to Field et al., (Field) (IDS reference).

Regarding claims 1 and 2 Field disclosed (Fig. 6) a microelectromechanical system (MEMS) comprising conductors (152) located on a first level and conductors (12, 14) located on a second level, where the conductors (152) on the first level are supported by a deformable element (136, 138, 140, 154) which is able to trigger by means of a bimetallic effect actuator, and where the effect of the triggering is to modify the distance between the conductors (152) of the first level and the conductors (12, 14) of the second level, characterized in that the bimetallic effect actuator consists of resistors (156, 158) in close and localized contact with the deformable element (136, 138, 140, 154), and in that the resistors (156, 158) are capable, when they are traversed by an electric control current, of expanding sufficiently under the effect of the heat produced by the passage of the electrical control current to cause, through a bimetallic effect, the triggering of the deformable element (136, 138, 140, 154).

The functional recitation that the triggering of the deformable element is accomplished "before the heat produced in the resistors has been able to propagate in the deformable element", while being considered, has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth in 35 USC § 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller*, 1929 C.D. 172; 388 O.G. 279. In the instant case, no sufficient

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structure has been recited in the claim in order to support the aforementioned functional recitation.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Field in view of US/6355534 to Cheng et al., (Cheng).

Regarding claims 11 and 12, Field disclosed all of the claims limitations as apply to claim 1, but did not disclose that said first and said second level conductors are electrodes of a condenser (capacitor) with switchable (tunable) capacity.

Cheng disclosed a variable tunable MEMS capacitor (condenser) (Fig. 1) having electrodes (14) and (18) separated by a dielectric, wherein one of the electrodes (18) is supported by a deformable member (16). Said deformable member (16) is movable up and down along with said deformable member (16), thereby switching (tuning) the capacitance of the capacitor (condenser).

Since inventions of Field and of Chang are from the same field of endeavor (MEMS devices), the purpose of the MEMS device being used as a tunable condenser (capacitor) disclosed by Cheng would be recognized in the invention of Field.

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It would have been obvious to a person of ordinary skill in the MEMS art at the time the invention was made to use said MEMS device of Field as a tunable (switching) condenser (capacitor) as taught by Cheng in order to accommodate said MEMS device of Field for a particular application which requires the presence of the tunable capacitor.

Alternatively, it would have been obvious to a person of ordinary skill in the MEMS art at the time the invention was made to use said MEMS device of Field as a tunable (switching) condenser (capacitor), since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

7. Claims 3-5, are rejected under 35 U.S.C. 103(a) as being unpatentable over Field in view of US/5,619,177 to Johnson et al., (Johnson).

Regarding claim 3, Field disclosed all of the claims limitations as apply to claims 1 and 2 above, but did not disclose electrostatic holders.

Johnson disclosed (Fig. 4, 5) a MEMS switching device having electrostatic holders (106, 116), (90, 94), and (92, 96) to hold deformable member (102) or (78, 80, 82) in position after it is switched and electrical control current is cancelled.

Since inventions of Field and of Johnson are from the same field of endeavor (MEMS devices), the purpose of the electrostatic holders disclosed by Johnson would be recognized in the MEMS device of Field.

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It would have been obvious to a person of ordinary skill in the MEMS device art at the time the invention was made to supplement said MEMS device of Field with electrostatic holders as taught by Johnson in order to provide said MEMS device of Field with the self-holding feature and consequently to reduce the consumption of electricity by the device (since the heating resistors do not need to be energized in order to hold said deformable member in switched position).

Regarding claims 4 and 5, Johnson disclosed (Fig. 5) that said electrostatic holder (106, 116) having electrodes facing one another and one of the electrodes (116) forms a single piece with the deformable member (102) and the other (106) is positioned such that, when the deformable member (102) has triggered, the distance between the facing electrodes is minimal (Fig. 1A) or separated by electrical insulators (Fig. 4).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure:

US/6437965, 6418006, 6239685, 4423401, 5029805, 5058856, 5619061, 5796152, 6504447, and 6456190 disclosed MEMS actuators.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 703-308-7824. The examiner can normally be reached on 9:30-6:00, Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg can be reached on 703-308-4815. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Anatoly Vortman
Primary Examiner
Art Unit 2835

A.V.
January 17, 2003

A. Vortman